Contaminants in the Mississippi River, 1987–92

Edited by Robert H. Meade

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Fecal Coliforms in the River

Figure 53 Bacterial contamination of water is commonly assessed by measuring fecal coliform bacteria, which are present in untreated domestic sewage and animal wastes in extremely large concentrations (1,000 to 100,000 organisms per milliliter; American Public Health Association, 1992). The current maximum contaminant level for whole-body-contact recreation for fecal coliform bacteria is 200 organisms per 100 milliliter (mL). Coliform bacteria have been measured at many sites on the Mississippi River from the 1920s to the present. Fecal coliform concentrations as great as 100,000 organisms per 100 mL that were measured in the river in 1925–26 resulted from untreated sewage inputs near Minneapolis-St. Paul, Minnesota (Wisconsin State Board of Health, 1927). By the 1970s, improved wastewater treatment had greatly decreased fecal coliform concentrations in most of the river although high levels were still reported below Minneapolis-St. Paul and St. Louis, Missouri (Water Quality Work Group of the Great River Environmental Action Team, 1980a, 1980b). Fecal coliforms also are derived from animal waste and feedlot runoff.

The box plots in the figure show fecal coliform concentrations along the Mississippi River from 1982 to 1992 obtained from the U.S. Environmental Protection Agency's STORET data base and the U.S. Geological Survey's WATSTORE data base. Data for St. Louis from the Illinois River Watch program and data from the current study for 1991–92 also are plotted in the figure. Median fecal coliform concentrations exceeded the standard by a factor of 10 or more near Guttenberg, Iowa, Rock Island, Illinois (Quad Cities), St. Louis and Cape Girardeau, Missouri, and Memphis, Tennessee. The standard was exceeded to a lesser extent at several other locations. Standards also were exceeded in the Rock, Iowa, Des Moines, Missouri, and Kaskaskia Rivers (data not shown in the figure). Although earlier studies (Water Quality Work Group of the Great River Environmental Action team, 1980a) showed the standards being exceeded near Minneapolis-St. Paul, our measurements showed coliform counts in that area that were lower than the standard, indicating efficient removal during wastewater treatment. The fecal coliform contamination near St. Louis during 1991–92 was consistent with data reported by the Water Quality Work Group of the Great River Environmental Action Team (1980b), and probably results from lack of chlorination of treated sewage effluent in the metropolitan area.

Figure 53 *Fecal Coliforms in the River*